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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,946	04/13/2000	Maria Cristina B. Estacio	18865-004500US	6946

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TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER

PAREKH, NITIN

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 02/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/548,946

Applicant(s)

Estacio et al

Examiner

Nitin Parekh

Art Unit

2811



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☒ Responsive to communication(s) filed on Nov 29, 2001

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) 5 and 6 is/are pending in the application

4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 5 and 6 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirements

## Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on Apr 13, 2000 is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some\* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_

20) ☐ Other:

Art Unit: 2811

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Temple et al (US Pat. 5103290).

Regarding claims 5 and 6, Temple et al disclose a chip device/package comprising:

- an integrated lead frame (96/98/94 in Fig. 12; Col. 8, line 39- Col. 9, line 45) having source (96 in Fig. 12) and gate (98 in Fig. 12) terminals/connections
- a bumped die (Fig. 2; Col. 4, line 5- Col. 7, line 5) including solder bumps (30/44 in Fig. 3-9; Col. 5, line 38- Col. 7, line 3; Col. 8, line 1-38) on top side, the die being attached/soldered to the base of the integrated lead frame such that the solder bumps contact respective source and gate terminals/connections
- a copper plate/frame (84 in Fig. 11 and 12; Col. 8, line 39- Col. 9, line 45) having a top surface soldered to the backside metallization of the die (Col. 8, line 57) and a bottom attached/bonded

Art Unit: 2811

to the lead rail (82 in Fig. 11/12; Col. 8, line 44) using conventional processes such as soldering, brazing, etc. such that the copper plate contacts the drain region (metallization 14 at the backside of the die in Fig. 10-13)

(Fig. 1-13; Col. 4-14).

Temple et al disclose using a copper plate/frame connecting the backside of the die with the lead rail but fails to specify/designate the copper plate/frame as a copper clip.

The conventional components used in the chip interconnection/packaging art including conductive plate/strap, clip, frame/ring, etc. can be designated/specified according to the shape and function (reduced electrical resistance, stress relief, etc.) of the interconnecting components.

Therefore, it would have been obvious to a person of ordinary skill the art at the time invention was made to incorporate a copper clip attached/connected to the backside of the die to achieve the desired electrical resistance and bonding yield in Temple et al's device.

### ***Response to Arguments***

3. Applicant's arguments filed on 04-13-2000 have been fully considered but they are not persuasive.

Art Unit: 2811

A. Applicant contends that it would not have been obvious to one of ordinary skill to use a copper clip in place of copper plate since copper plate of Temple et al provides the functions of providing an electrical connection to the drain and spreading the heat.

However, as explained above, it is conventional in the chip interconnection/packaging art to use components such as conductive plate/strap, clip, frame/ring, spring, etc. in a variety of different shapes and forms and such components provide electrical and mechanical functions including stress relief, component rework/removability, etc.

B. Applicant contends that Temple et al do not disclose a lead rail contacting the drain region of the die.

However, as seen from Fig. 12 in Temple et al's device, the copper plate/frame (84 in Fig. 11 and 12; Col. 8, line 39- Col. 9, line 45) having a top surface soldered to the backside metallization of the die (Col. 8, line 57) and a bottom being integrally attached/bonded to the lead rail (82/94 in Fig. 11/12; Col. 8, line 44) using conventional processes such as soldering, brazing, etc. such that the lead rail/copper plate contacts the drain region (metallization 14 at the backside of the die in Fig. 10-13). Furthermore, Temple et al disclose bending the rail portion of the lead frame/plate to provide a package with source, drain and gate terminals (Col. 9, line 20).

Art Unit: 2811

***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Papers related to this application may be submitted directly to Art Unit 2811 by facsimile transmission. Papers should be faxed to Art Unit via Technology Center 2800 fax center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989).

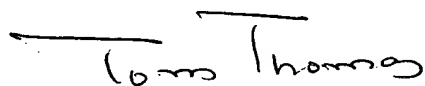
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number is (703) 305-3410. The examiner can be normally reached on Monday-Friday from 08:30 am-5:00 pm.

Art Unit: 2811

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached on (703) 308-2772. The fax number for the organization where this application or proceeding is assigned is (703) 308-7722 or 7724.

Nitin Parekh

01-31-02

  
**TOM THOMAS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**